how these may be effectively used. "It undertakes to make significant some of the commonplace environment and to suggest ways in which living material may serve educational ends." Great prominence is given to material which has social and practical interest, but the danger of fostering a one-sided utilitarian outlook is guarded against. "The great contributions of science to the life of mankind are: its emphasis on the scientific mode of thinking or the problem-seeing, problem-solving attitude of mind; a mass of scientific knowledge that serves as the basis for desirable skills; and an interpretation of Nature productive of an inspiring appreciation, both intellectual and æsthetic, of her phenomena. Science instruction needs to assure these things to the individual pupil." These are clearly defined aims, and the book appears to us to be highly successful in all the three directions indicated—in setting problems and cultivating the curious spirit; in showing that Nature-study makes for efficiency as well as for understanding; and in cultivating a reasonable love of Nature. A note with fine resonance is struck when the author declares his ambition to treat his material so that "the everyday things may stand revealed as the wonders they really are."

The book deals with animals of pond and stream, insects and their allies, birds, gregarious animals, wayside flowers, common trees, seeds and seedlings, the garden, and spore-bearing plants. Each chapter has its list of references; there are practical hints as to material; the illustrations are abundant and interesting. They include some pupils' drawings. There is a genuine attempt throughout to get at the child's point of view and to use its judgment of values. "The teacher needs to take much of the foolishness of childhood along with her, and needs also to be persuaded that it is not altogether foolish." But there is no namby-pamby nonsense. We wonder a little, however, at some of the phrases which are unfamiliar to us, such as the chick's egg or the chicken's egg. Why not the hen's egg, and be done with it?

Of the many features which are admirable, we may give a few illustrations: (*a*) There is an embarrassment of living creatures in many country places. The author's plan is to make sure of the commonest—let us say, a score of the butterflies, birds, or trees. (*b*) There are many subjects which are so little understood that the cautious teacher is often inclined to leave them alone. The author's advice is rather to tackle them, to confess them as unsolved problems, and to leave them as seeds in the mind. We refer to such subjects as the migration of birds. (*c*) The author is not afraid of sounding the note of wonder. "To watch the germination of an inert seed, the development therefrom of the tiny plant, the growth of bursting bud and flower, is to cross the threshold of Nature's impenetrable mysteries." He quotes the sentence: "The love of a flower in the heart of a child is the highest thing that Nature-study can hope to develop." But the suggestion of this mood is not inconsistent with learning quite precisely how to graft or with understanding the work of Mendel or of Pasteur. We are sure that teachers of Nature-study will find Mr. Downing's book very profitable, and they ought also to know his almost perfect introduction to heredity, "The Third and Fourth Generation."

VACCINE-THERAPY.

Practical Vaccine Treatment for the General Practitioner. By Dr. R. W. Allen. Pp. xii + 308. (London: H. K. Lewis and Co., Ltd., 1919.) Price 7*s*. 6*d*. net.

THE author of this little work is well known as an enthusiastic advocate of vaccine-therapy, on which subject he has already written widely. In the present volume he addresses himself more particularly to the general practitioner, for whose benefit and guidance he explains in lucid and forcible terms his methods and practice. The one theme which runs through the whole volume, and colours his frequent comments on the experience and teaching of other vaccinists, is his insistence on the necessity for adequate dosage capable of exciting focal or general reactions and its control by the closest observation of the patient's responses and clinical symptoms. He asks his readers to follow his methods and thereby assist vaccine-therapy "to take its rightful position as the most truly scientific therapeutic agent in the doctor's armamentarium." Unfortunately, however, the book contains scarcely one pessimistic note, and, again, the unbiassed reader, who otherwise wishes vaccine-therapy well, is left with the reflection that, so long as the results of vaccine-therapy continue to be assessed by the unscientifically accumulated personal impressions of vaccinists, so long will vaccine-therapy continue to hold no higher position than that of an empirical remedy, in spite of its undoubted scientific basis.

On this point the author, referring to vaccine treatment in respiratory diseases, remarks: "No physician has the right to play about with cases of pneumonia to satisfy statisticians or opponents of vaccine treatment. It thus becomes necessary to rely on the clinical impressions of reliable observers." Such impressions, we believe, carry less and less weight when we come to evaluate

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the results of specific therapy in its widest sense, and it is not unlikely that, as our knowledge of the non-specific as well as the specific therapeutic effects arising from the introduction into the animal body of a bacterial protein accumulates, many of the deductions so glibly drawn by ardent vaccinists may go by the board. None the less, as an exposition of the faith of an enthusiastic and somewhat over-confident vaccinist, the book is well worthy of perusal, and contains what, on the whole, appears to be sound advice.

The early chapters are devoted to general questions connected with the nature, preparation, and administration of vaccines, and are excellently written. For the chapter dealing with the best methods for securing material from various sources for culture and preparation of vaccine, the reviewer has nothing but praise, the laudable object being to secure "the right kind of material in the right kind of way." Chapters follow on the use of vaccines in prophylaxis and in the treatment of the carrier-state, but the greater part of the book is devoted to vaccines as therapeutic agents in practically every microbic disease. There would appear to be no microbic disease, whether of acute or chronic character, which is not amenable to vaccine-therapy when employed in the manner indicated by the author.

OUR BOOKSHELF.

The Stars Night by Night: Being the Journal of a Star Gazer. By J. H. Elgie. (First published as "Night Skies of a Year," 1910.) Pp. xiv + 247. (London: C. Arthur Pearson, Ltd., 1919.) Price 1*s.* 6*d.* net.

THERE are many ways of being an astronomer, of which perhaps the easiest is to learn the stars and know them by position and name—and there are grades even in that. We do not imply that this defines Mr. Elgie's limitations, but he has written a very pleasant and useful book to help others to attain this degree of astronomical knowledge. Of such books there are many, but this is somewhat unusual. Written in a chatty manner on the model of White's "Selborne," it describes the author's experiences as a star-gazer or naked-eye observer throughout a year, with much quotation, anecdote, and general astronomical information intermingled. There are more than a hundred diagrams, showing the constellations as they appear with reference to the horizon at different dates. Naturally, the diagrams apply to any and all years, so the year when the observations were made is not given, except incidentally in the index, but the fact that the author saw Mira Ceti at maximum early in January, and that it was then as bright as γ Cygni, is fairly conclusive evidence that it was 1907.

The book is a cheap reprint of an earlier one published in 1910, "The Night Skies of the Year," which still remains as the page-heading, and it is not surprising that this reprint should have been considered advisable. It should command a large sale, for both the general reader and the astronomer of any category will find something of interest in its pages.

The Examination of Milk for Public Health Purposes. By Joseph Race. Pp. vi + 224. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1918.) Price 8*s.* 6*d.* net.

THIS book gives a very useful summary of the chemistry and bacteriology of milk. The chemical portion includes the composition of milk and the chemistry of the various constituents, enzymes, immune bodies, mineral salts, etc., with details for their detection and estimation. Milk standards are considered, as well as preservatives. In the bacteriological portion a general account is given of the bacteria of milk and of methods for their enumeration. Chapters are devoted to excremental organisms and to streptococci, to the tubercle bacillus and other pathogenic organisms which may occur in milk, to cells, dirt, débris, etc. Chap. ix. deals with pasteurised milk and aciduric bacilli; and directions for the preparation of culture media and tables of specific gravity, for the conversion of cuprous oxide and copper to lactose, etc., are given in an appendix. The descriptions throughout are clear and concise, and the analytical methods are clearly set out. The book, which contains within its compass an extraordinary amount of information, is most useful, and can be strongly recommended as a laboratory handbook for the teacher and student.

R. T. H.

Insect Pests and Plant Diseases in the Vegetable and Fruit Garden. By F. Martin Duncan. Pp. 95 + 12 plates. (London: Constable and Co., Ltd., 1919.) Price 3*s.* 6*d.* net.

THE object of this little volume is to provide gardeners and allotment-holders with a simple account of the commoner insect and fungoid pests. The descriptions of the various harmful species appear to be on the whole trustworthy, and some approved methods for eradicating them are recommended. But the book's value is diminished by want of revision in the light of modern work. For example, the author is content with Curtis's determination of the potato aphid, and states that the larva of *Anthomyia radicum* is a common pest on cabbage roots, which, despite the name of the fly, is not the case. The account of the infection of potato by Phytophthora and the denial of sexual reproduction in this fungus also require modification. The seven orders (including the comprehensive "Neuroptera" of old-time entomology) into which insects are said in the introduction to be "generally grouped" would not be accepted as an adequate systematic arrangement by any student of to-day. The illustrations include some good photographs and some indifferently executed drawings.

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